

**Appendix B**  
**Summary of Previous Year's (FY 1996) ES&H Performance**

The Laboratory prepares its ES&H Management Plan (the Plan) annually in accordance with the guidance provided by DOE-HQ, DOE-CH, and the Fermi Group. The process used to develop the Plan combines top-down guidance from the Department with bottom-up analysis and decision-making by Fermilab line managers and ES&H professionals. The risk-based resource constrained process is used by Fermilab to optimize available resources to manage ES&H. Utilizing this approach, Fermilab management has been able to consistently ensure that ES&H risks are being adequately addressed within the Lab's budget.

The initial Plan developed for FY96 activities was prepared in April of 1994, and then updated in April of 1995. In April of 1996, while preparing the FY98 Plan, Fermilab evaluated its progress to date with respect to accomplishing ES&H activities planned for FY96 and updated the FY97 portion of the FY98 Plan accordingly. This report evaluates Fermilab's FY96 ES&H posture by evaluating the Lab's ES&H risks, compliance status, and Tiger Team Corrective Action Plan progress. This report also compares and analyzes planned versus actual ES&H activities and expenditures.

**A. ES&H Risks**

Since the closeout of the Category 2 Tiger Team findings (Lockout Tagout, Confined Space Entry, and Electrical Safety), no significant risks have existed at Fermilab. The risks associated with operating systems and equipment to conduct HEP research (radiation, electricity, hazardous chemicals and gases, etc.) are all being managed through the training of appropriate personnel, drafting and using adequate procedures, and operating and maintaining equipment and systems within accepted safety limits.

**B. Compliance Status**

For the most part, Fermilab is in compliance with all applicable safety and health regulations and Illinois Environmental Protection Agency (IEPA) statutes. Most compliance and improvement efforts underway are concerned with upgrading already existing programs and achieving full compliance with 29CFR1910 (OSHA) standards. These efforts include asbestos abatement

and personal protective equipment (PPE) upgrades. Efforts are also underway to achieve full compliance with the applicable portion of the National Fire Protection Association (NFPA) code. In FY1996, Fermilab achieved compliance with the Radiation Protection Standard (10CFR835) and the Department of Transportation (DOT) regulations concerning site access and public roadways. Efforts underway throughout FY96 and continuing in FY97 involve the installation and operation of automatic gates to control site access.

#### C. Major ES&H Initiatives

Over the past year and a half, Fermilab has undertaken a significant ES&H effort aimed at determining and implementing the set of Work Smart (formerly known as Necessary and Sufficient) standards by which safe operations of the Lab will be assured. Determination of the applicable set of Work Smart standards was completed in July of 1995, at which time this set of standards was adopted into the Fermilab contract. This initiative streamlined many of the Lab's ES&H administrative functions and resulted in some reductions in planned ES&H compliance activities that remained "on the books" from the 1992 Tiger Team Assessment.

#### D. Funding Reduction

In FY94, the Lab's HEP operating budget was \$171M. As such, when the FY96 Plan was first being prepared in FY94, the Lab assumed, for planning purposes, that its FY96 budget would be the same as FY94 (i.e., \$171M). In actuality, the Fermilab HEP operating budget for FY96 (after subtracting out funding specified for the Compact Muon Solenoid and Large Hadron Collider projects, the Positron Emission Topography project, and the monies transferred from plant to operating) was \$168M. Utilizing a 3% inflation factor for 1994 and 1995, the Lab's actual operating budget of \$168M in FY96 represents a \$13M decrease in available funding from FY94 to FY96.

#### E. Reduction of ES&H Personnel

Since preparation of the first draft of the FY96 Plan in April of 1994, Fermilab has reduced its staffing by approximately 100 persons. Of these 100 persons, approximately 14% were ES&H professionals. Total ES&H staffing at Fermilab has gone from an estimated 163

FTEs in FY94 to 148 FTEs in FY95 to 136 FTEs in FY96. Some of these reductions were due to the reassignment of personnel to other programmatic activities at the Lab; others were reductions in force. Through this transition period, Fermilab has managed its personnel reduction effectively so that these ES&H reductions have not caused any unsafe or noncompliant working conditions. Additionally, this reduction in staffing has not resulted in any significant shortages in ES&H personnel skill mix nor has the lack of ES&H support delayed any planned programmatic operations.

#### F. Compliance and Improvement Activity Backlog

Throughout late FY95 and FY96, Fermilab determined and began to implement its set of Work Smart standards. Implementation of these Work Smart standards reduced the backlog of some 47 Tiger Team tasks which in previous years of the ES&H Management Planning Process had been "bundled" into a number of low priority Compliance and Improvement Activity Data Sheets (ADSs). This reduction of 47 Tiger Team tasks translated into an elimination of 22 ES&H ADSs saving approximately \$11M.

#### G. ES&H Accomplishments

In FY96, Fermilab completed work on and closed out some 18 compliance and or improvement ADSs in accordance with funding and risk reduction profile established by its ES&H Management Plan. The remaining compliance and improvement ADS backlog is minimal and will be updated again in the Spring of 1997 during the development of the FY99 ES&H Management Plan. A specific breakout of activities, including General Plant Projects, completed can be found in Attachment A.

#### H. Planned versus Actual ES&H Expenditures

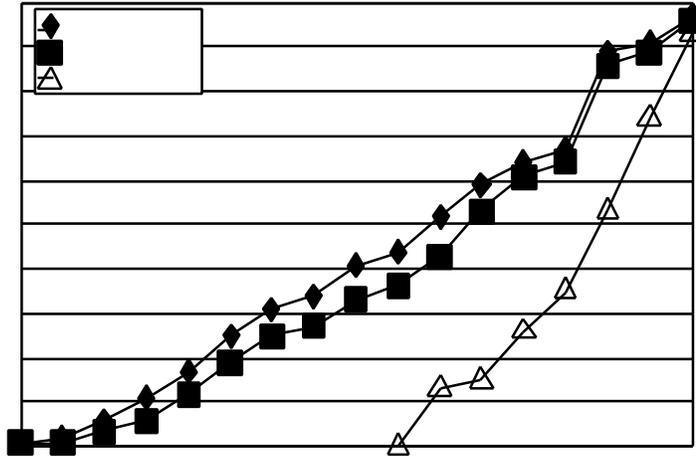
A comparison of planned versus actual expenditures for FY96 shows that Fermilab's actual ES&H expenditures differ from those planned by less than 3%. (Note: Fermilab's actual ES&H expenditures are greater than 97% of the planned ES&H resources.) The comparison of planned versus actual ES&H expenditures (\$ Thousands), for the various Fermilab divisions and sections, is shown by the table below:

Division	FY96 Planned	FY96 Actual
Direct		
Accelerator	\$1575.5	\$1579.0
Research	1265.9	1250.6
Computing	78.6	72.8
Tech Support	488.9	377.2
Physics	117.0	108.4
Indirect		
FESS	1088.0	759.5
Business Services	207.9	170.3
Lab Services	399.6	423.3
Directorate	154.7	140.9
ES&H	3985.0	4331.7
TOTAL	\$9361.1	\$9213.7

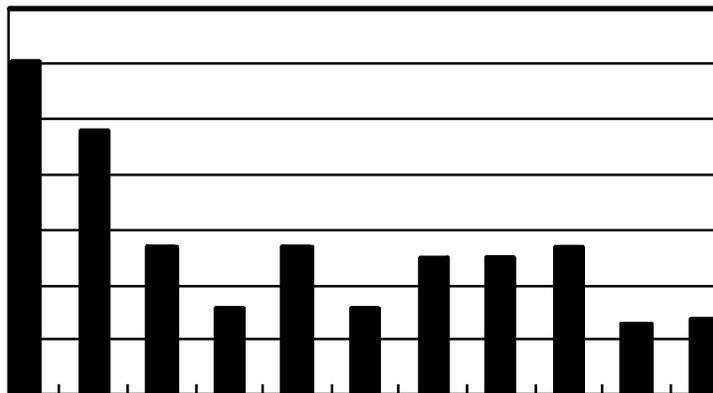
#### I. FY1996 ES&H Conclusions

A year end review of the Fermilab ES&H Management Plan for FY96 shows that actual ES&H activities, expenditures and accomplishments track very closely with those that were planned. Over the past year, Fermilab has made significant progress in "working off" its Tiger Team legacy and implementing a set of Work Smart standards while managing the Lab's downsizing and subsequent reduction of ES&H personnel. Throughout FY96, Fermilab conducted its operations in a safe, compliant, and cost-effective manner.

Perhaps more than any other Energy Department site or facility, Fermilab has made significant progress in closing out its Tiger Team findings and upgrading its compliance posture. During FY 1996, an additional 40% of the Tiger Team tasks were closed out, leaving less than 7% remaining open at the end of FY 1996. The progress to date is shown by the graph below:



Nearly as remarkable has been Fermilab's ability to consistently manage its operations in a way that both improves the Lab's compliance posture but more importantly reduces the Lab's worker injury cost index. In the future, a goal will be to also reduce worker injury rates. The results of Lab's the ten-year injury cost index are shown by the graph below:



While Fermilab has successfully improved the safety controls of many Lab operations, upgraded its compliance status, and managed its reduction in ES&H personnel, many challenges still remain concerning the management of ES&H activities including realignment of the various ES&H functions to support the new Lab organization: Beams Division, Computing Division, Particle Physics Division, and Technical Division. Additionally, Fermilab line and ES&H managers will continue to focus on the challenges associated with lowering occupational injuries and illnesses, minimizing ergonomic effects, achieving full compliance with the approved set of Work Smart standards, and implementing an effective ES&H assessment program.

As the DOE sites and facilities move to develop and implement Integrated Safety Management Systems (ISMS) in response to Defense Nuclear Facilities Safety Board Recommendation 95-2, Fermilab finds that it has met most, if not all, of the objectives of the ISMS through its 1) determination and implementation of Work Smart standards, 2) development and implementation of aggressive employee (ES&H) training programs, 3) implementation of procedures and rigorous work center standards (conduct of operations, maintenance management, accelerator safety, lockout tagout, etc.), 4) utilization of the ES&H Management Planning process to integrate ES&H into the Lab's systems to plan, budget, execute and monitor work, and 5) pursuit of a tri-partite assessment program to ensure superior ES&H performance and continued line management ownership and accountability for ES&H. At Fermilab, Integrated Safety Management has been a way of conducting HEP research throughout the 1990's.